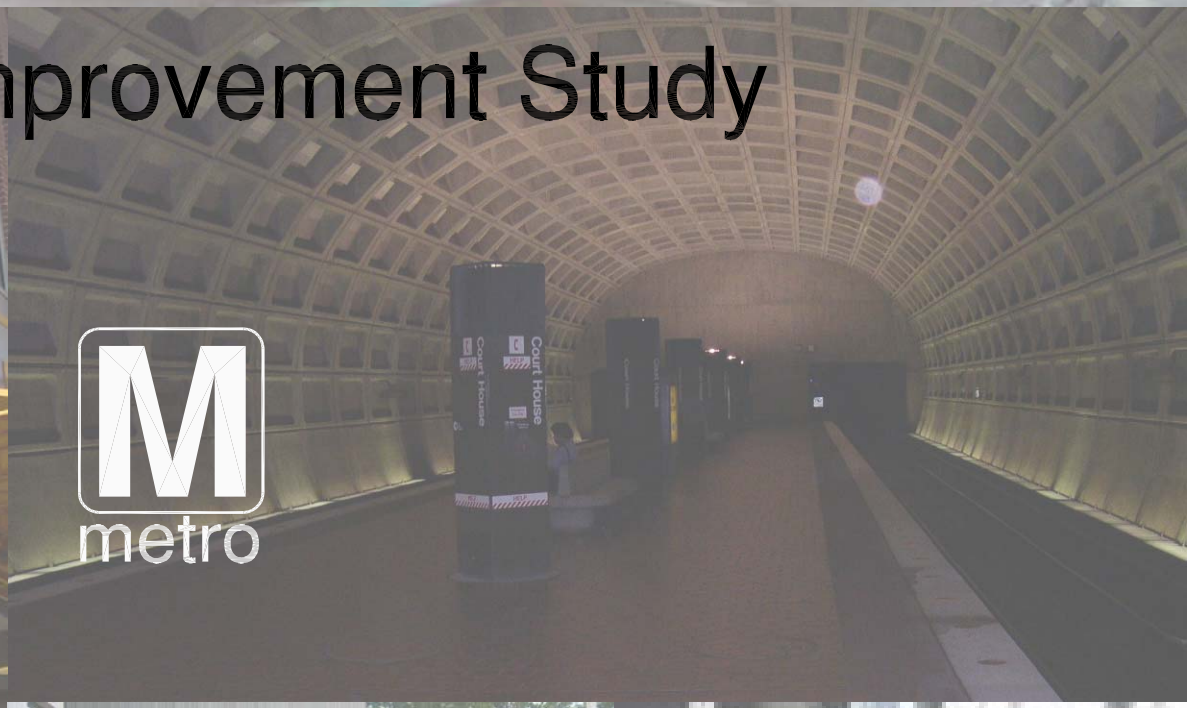
Court House Metrorail Station Access Improvement Study



Washington Metropolitan Area Transit Authority

Department of Planning & Strategic Programs/Office of Buisness Planning & Project Development

Final Report

October 2004

TABLE OF CONTENTS

Contents	Page No.
1.0 INTRODUCTION	
The Rosslyn-Ballston Corridor	**1**
The Courthouse Area	**2**
Study Objective	**2**
2.0 EXISTING CONDITIONS	
The Court House Station	**4**
Transportation Systems	**4**
Existing Metrorail Ridership	**6**
Station Access Deficiencies	**6**
3.0 GROWTH FORECASTS	
Courthouse Area Development	**8**
Demand Analysis for New Station Entrance	**10**
4.0 STATION ACCESS IMPROVEMENTS	
Elevator Service	**13**
New Station Elevator Entrance	**14**
Street Improvements/Image	**15**

Contents	Page No.
5.0 NEW STATION ENTRANCE DESIGN	
Design Alternatives	**16**
Preferred Design Alternative	**16**
Construction	**23**
Order of Magnitude Cost	**24**
6.0 NEXT STEPS	**24**
APPENDIX	
Capacity and Traffic Analysis - Existing Street Elevator	**I**
Existing Street Elevator Use - Peak AM Half-Hour	**II**
Existing Street Elevator Use - Peak PM Half-Hour	**III**
Capacity and Traffic Analysis - New Street Elevator	**IV**
Metro is Accessible Program	**V**

1.0 INTRODUCTION

The Rosslyn-Ballston Corridor

In the late 1960s, when planning for the original 93-mile Metrorail system, Arlington County made the decision to locate five of its stations underground below an aging, low-density commercial strip along Wilson Boulevard instead of along the I-66 median. The County's long range planning goal was to stimulate office, retail and residential development in an area of Arlington County known as the Rosslyn-Ballston corridor.

In December 1979, Metro opened the Orange Line service along the Rosslyn-Ballston corridor with the Court House, Clarendon, Virginia Square, and Ballston Metrorail Stations. Since that time, the Arlington County vision for transit to serve as the catalyst for intensive redevelopment along the commercial spine of central Arlington has been realized, with the Rosslyn-Ballston corridor becoming a major employment center and a vibrant place for people to live, shop and work.

Since 1980, Arlington County's plans for transit-oriented development generated construction of 22,500 houses and apartments, 21 million square feet of office/commercial/retail space, and 3,000 hotel rooms along the Rosslyn-Ballston corridor. The corridor, containing 7.6 percent of the County's land area, generates 33 percent of its property tax revenue.

In 2002, the U.S. Environmental Protection Agency (EPA) selected Arlington as "Best Overall" in its national recognition program for the County's smart growth policies and results (See Figure 1). The EPA specifically cited the County's policies concentrating high-density development in this corridor as the leading factor in the doubling of Metrorail ridership in the corridor between 1991 and 2002.

Figure 1: Rosslyn - Courthouse Area

The Courthouse Area

The Courthouse area is one of Arlington County's urban villages along the Rosslyn-Ballston corridor. It is served by the Court House Metrorail station located between the Rosslyn and Clarendon stations. The land use consists of a diverse mix of high to medium density commercial/retail/office, hotel, and residential development that tapers down to townhouses and single family dwellings farther out from the station. Commercial development immediately around the station includes Arlington County government facilities, educational facilities, movie theaters, shops and restaurants. Within the Courthouse area there are approximately 7,000 households and 16,000 jobs [Figure 2].

Study Objective

The main objective of this study is to develop a plan for a new station entrance and mezzanine in order to improve customer convenience and access to the Metrorail station. This includes providing better pedestrian access and generally maximizing the convenience of Metrorail as a service to the Courthouse area. Plans for a new station entrance and pedestrian improvements at the Court House station would be consistent with Arlington County's strategic plans for stimulating transit-oriented development along the Rosslyn-Ballston corridor with continuing investment in Metrorail access.

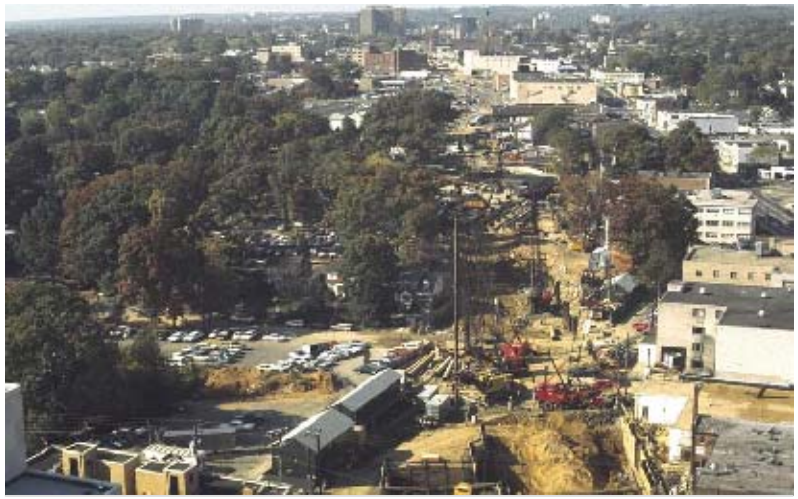


Figure 1A: Construction Begins on the Court House Metrorail Station

Figure 2: Court House Station Area, Arlington County

2.0 EXISTING CONDITIONS

The Court House Station

The Court House Metrorail Station has three station entrances leading to underground passageways that connect with a single mezzanine on the east end of the station [Figure 6]. The entrance farthest from the station, located on the north side of Wilson Boulevard in the Colonial Village development, is accessed by one stair-case and an elevator [Figure 3]. The main station entrance, located on the south side of Wilson Boulevard, is served by three escalators [Figure 4] . A third station entrance, located within the Courthouse Plaza development, has two escalators and one elevator [Figure 5]. Although the station has three street elevators, only one elevator serves the mezzanine level with an accessible path to the platform elevator. The other two street elevators travel only to the underground passageway that connects to the mezzanine via a bank of three escalators [Figure 6].

Figure 3: Colonial Village Entrance

Figure 4: Main Station Entrance-Strayer Univ.

Transportation Systems

In addition to Metrorail and eleven bus routes serving the corridor, the Courthouse area has excellent transportation facilities located along two, one-way commercial arterial streets: Wilson Boulevard and Clarendon Boulevard. The station area also has convenient access to Route 50/ Arlington Boulevard via Courthouse Road and N. Barton Street and to Lee Highway/I-66 via N. Veitch Street. Sidewalks along both sides of streets provide pedestrians traveling from the neighborhood safe, convenient access to the station with countdown signals at crosswalks at major intersections. Based on visual assessments, both traffic capacity on streets and pedestrian safety at intersections around the station area appeared to be good. Therefore, further traffic analysis was determined to be unwarranted for this study.

Figure 5: Courthouse Plaza Entrance

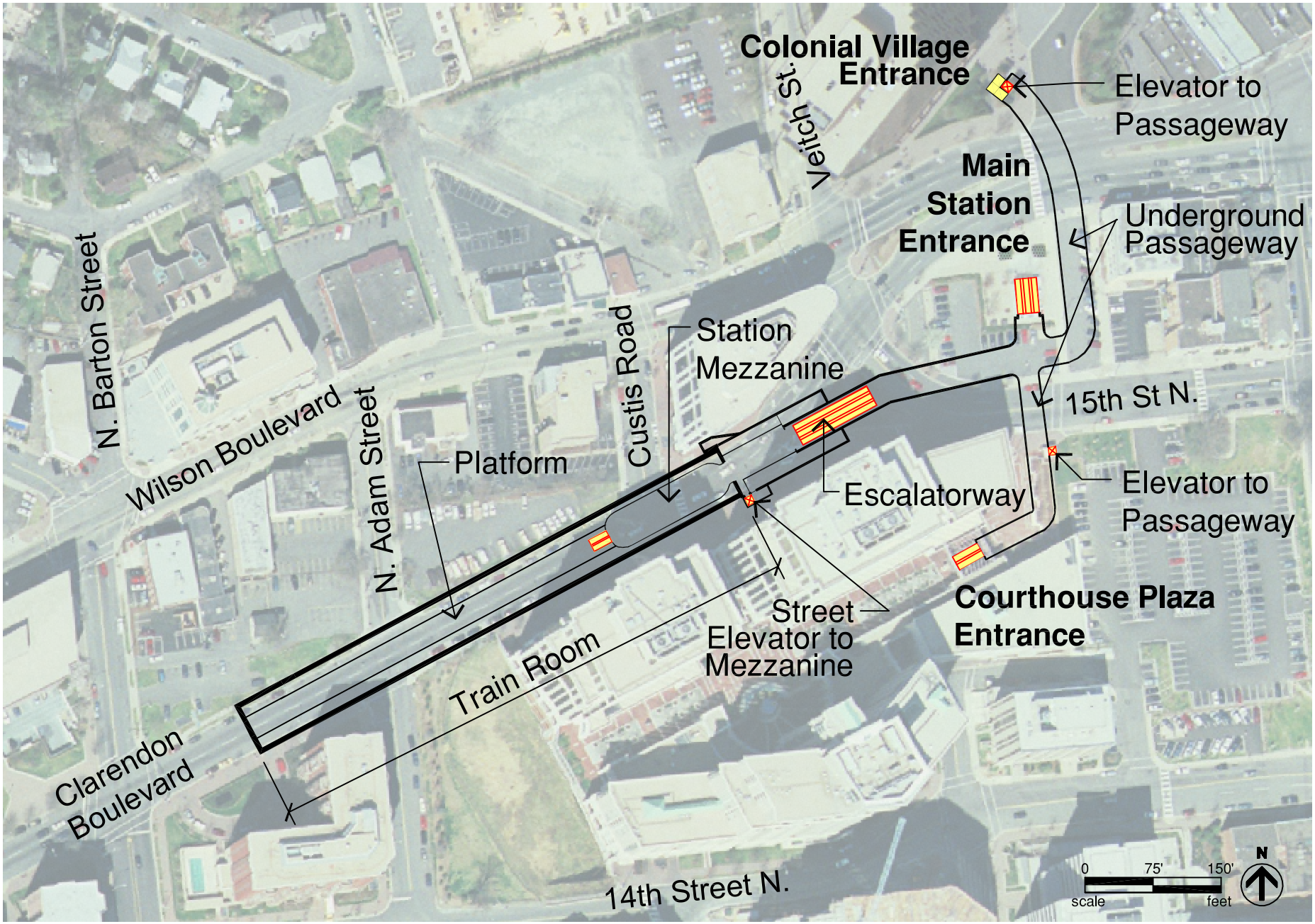


Figure 6: Court House Station Aerial Plan - Existing Conditions

Existing Metrorail Ridership

The Court House station handles approximately 14,000 combined daily entries and exits on a typical weekday. Figure 7 shows passenger counts for boardings (entries) and alightings (exits) at the station in half-hour intervals on an average weekday. In the AM peak hour, there were 1,750 entries and 900 exits. In the PM peak hour, there were 700 entries and 1,100 exits. The ratio of customers entering the station to those exiting suggests that the station is currently used more by residents than by workers. Figure 8 shows AM peak entries and exits in the first half of 2003.

Nearly all of the station customers arrive on foot. WMATA's 2002 Rail Passenger Survey found that 92 % of passengers access the station by walking in the AM peak period while the remaining passengers arrive by vehicle (6%) or by bus (2%). Nearly all of the passengers exiting the station (job end) during the AM peak period walk to their place of employment.

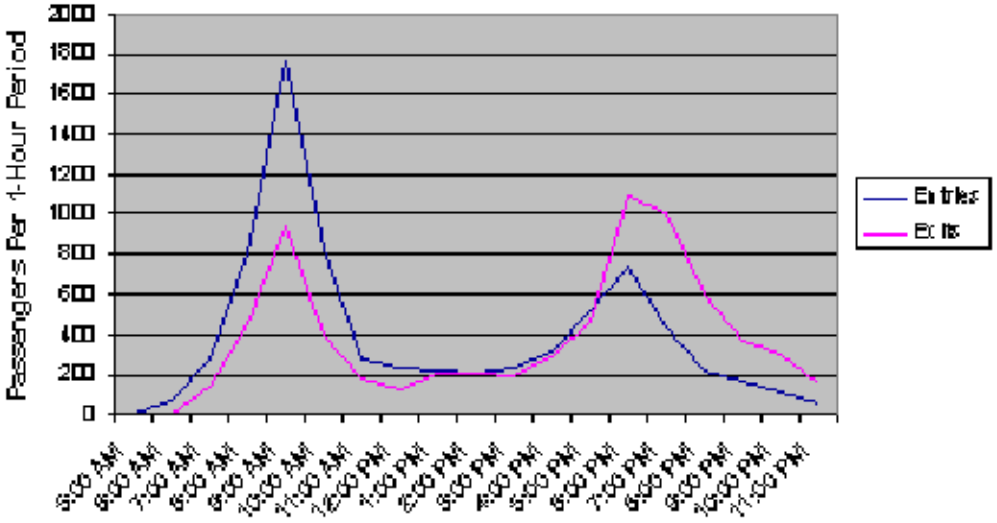
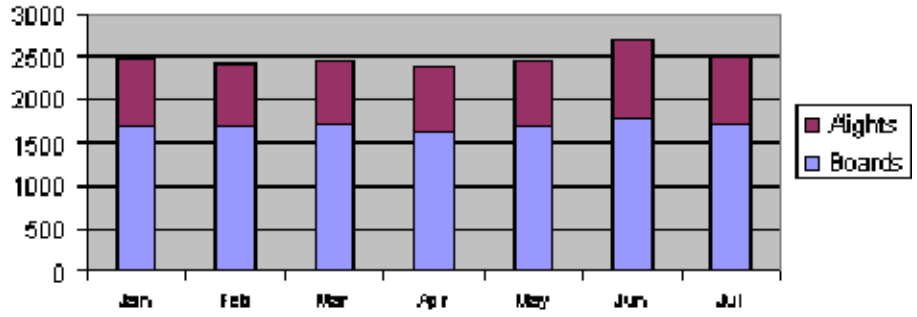


Figure 7: Court House Station entries and exits in one-hour intervals

Figure 8: AM Peak Hour Boarding and Alightings



Source: WMATA Faregate Data, 2003

Station Access Deficiencies

The underground passageways from the station mezzanine escalatorway to the three entrances are convenient for customers who are traveling from the east of the station by providing additional weather protection and giving customers a means to avoid crossing busy streets at 15th Street and Wilson Boulevard. However, these street entrance locations are not convenient for customers accessing the station from the west, since they must continue walking east beyond the mezzanine below before accessing the entrance, then backtrack to the mezzanine through the underground passageway. To avoid this longer walking distance and to save considerable time, customers accessing the station from the west tend to use the street elevator located on the south side of Clarendon Boulevard, which travels directly to the station mezzanine [Figure 6].

Station Access Deficiencies (continued)

Given the volume of customers accessing the station by the street elevator, the PM half-hour peak demand exceeds the elevator design capacity by a factor of 2, or 210% [Appendix I]. The capacity constraint on elevator service is evident from passenger counts conducted during the peak AM and PM half-hour of a typical weekday [Appendix II & III] and from visually observing elevator use by passengers at the street [Figure 9] and mezzanine levels [Figure 10]. The passenger counts indicate that 23% of station customers use the street elevator to access the station in the AM peak half-hour period and 18% in the PM peak period. The elevator vestibule in the mezzanine also is too narrow for adequate queuing space on each side of the elevator door [Figure 10].

Figure 9: Existing Street Elevator - AM Peak Period

Figure 10: Elevator Vestibule - PM Peak Period

Typical wait times for an elevator were observed to be approximately 1 to 1-1/2 minutes. Based upon industry standard planning guidelines for elevator service, the maximum wait time for an elevator should be no more than 30 seconds. In the peak direction, the elevator cab consistently fills beyond capacity leaving passengers who were unable to board waiting for the next elevator and experiencing wait times up to 3 minutes. Customers that regularly use this elevator have indicated that they experience longer than normal door cycle times, where the doors remain open for extended periods and passengers cannot close the door due to the absence of door control buttons. Installing door control buttons would reduce wait times, but only by a few seconds.

Overcrowding on the elevator interferes with its primary function of serving customers using wheelchairs and strollers. In fact, most customers using a wheelchair were observed waiting for the next elevator trip instead of boarding a crowded car.

Station Access Deficiencies (continued)

Station customers using wheelchairs or customers with strollers that rely on elevator service cannot access the station when either the single street elevator or the platform elevator is out of service. For 5 % of the last 6 month period, at least one elevator was out-of-service [Figure 12]. When either elevator is out of service, Court House station customers using wheelchairs must use the street elevator at the Clarendon or the Rosslyn station, then travel to the Court House station area using the Metrobus shuttle service. In light of WMATA's new *Metro Is Accessible* campaign aimed at encouraging people with disabilities to use Metrorail, making stations accessible to all by providing reliable, redundant elevator service becomes an important objective in station access planning.

Figure 12: Street Elevator - Out of Service

To provide optimum, reliable service for customers accessing the Court House station via the street elevator, expanding elevator service in the station with additional elevators becomes neccessary.

Figure 13: Potential Redevelopment Site - 2519 Wilson Blvd. at N. Barton Street

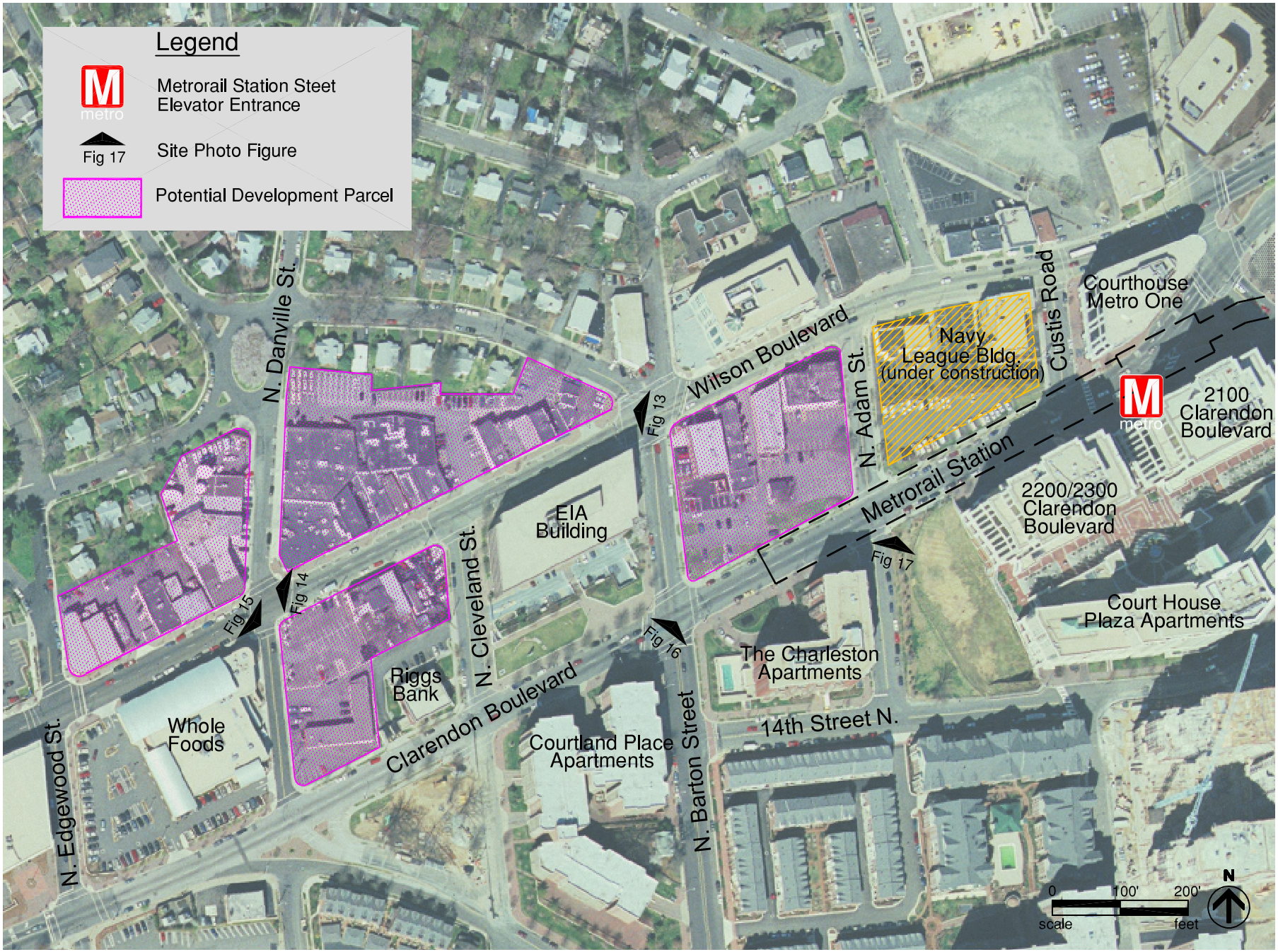
Figure 14: Potential Redevelopment Site - 2705 Wilson Blvd in the Clarendon Sector

3.0 GROWTH FORECASTS

Courthouse Area Development

According to a June 2002 Arlington County planning report entitled "Development Capacity in the Metro Corridors," the Courthouse area has 876,800 square feet of remaining commercial capacity and the potential for 2,633 more residential units. The report identifies five parcels of land located west of the existing Court House station entrances as potential redevelopment sites [Figure 11]. These sites have unbuilt development capacity that is below the allowable or preferred density defined in the County's General Land Use

Figure 11: Clarendon/Courthouse Area - Potential Development Sites



Courthouse Area Development *(continued)*

Plan [Figures 12 through 18]. One of these five parcels, located in the 2300 block of Wilson Boulevard, is the site of the Navy Building, a 200,000 square foot office building with 17,000 square feet of first floor retail space. This site is currently under construction [Figure 18].

Employment from the Navy Building, located across Clarendon Boulevard from the existing Metro street elevator, is expected to generate an additional 500 new Metrorail customers when it opens in the Fall of 2004. Most of these new customers would be expected to access the station via the street elevator.

Figure 15: Potential Redevelopment Site - 2519 Wilson Blvd. at N. Barton Street

Figure 16: Potential Redevelopment Site - New Station Entrance Location

Figure 17: Navy League Building Site

Demand Analysis for New Station Entrance

Planning for a new entrance at Court House Station begins with an assessment of existing and future demand. The future demand is based upon unbuilt capacity around the Courthouse area and Arlington County land use projections. Arlington County provided WMATA with land use data at the Census block level. By isolating the blocks associated with the new station, WMATA estimated the percentage of total station area residential and commercial uses served by a new entrance. These figures are shown below in Table 1.

Table 1: Existing and Future Land Use Analysis

	Residential *(units)*	**Commercial** *(sf)*
Existing	3,373	962,405
Build-Out	4,780	1,565,744
% Change	33%	33%

Source: Arlington County Land Use Data

WMATA Demand Analysis for New Station Entrance *(continued)*

According to the Arlington County planning report, both residential and commercial land use projections show a planned 33% increase in development around the station area. Based on this increased development, future ridership at the station would also increase by 33 %, resulting in combined boardings and alightings of 18,500 on a typical weekday. This would be evenly split between the proposed new entrance and the existing station entrances.

The number of jobs and residential units also is expected to grow by the same proportion, so the ratio of customers entering and exiting the station during the AM and PM peak periods is expected to remain the same as today. The mode of arrival is projected to remain the same with nearly all customers accessing the station on foot.

Figure 18 shows the 1/4-mile catchment area for the proposed station entrance location and the Census blocks contained in the study area. The 1/4-mile area captures a portion of the population outside of the current catchment area of the Clarendon and Court House Stations, thereby attracting new customers to Metrorail.

In planning a new station entrance for capacity considerations, WMATA uses peak half-hour demand figures to ensure that the new station entrance can comfortably, safely and efficiently accommodate Metrorail customers. Table 2 shows ridership projections during both the AM and PM peak periods. During the AM peak half-hour, 600 customers are expected to board the station at the new entrance. In the PM peak half-hour 465 customers are expected to alight at the new entrance.

Table 2: Peak Period Ridership Projections ** People per Minute*

Peak Loads	Peak Hour	Peak 1/2 Hr	PPM*
Existing AM Boardings	1750	900	29.2
Existing PM Alightings	1250	700	23.3
Future AM Boardings w/ 33% Growth	2330	1200	38.8
Future PM Alightings w/ 33% Growth	1660	930	31
Future AM Boardings at New Entrance	1165	600	19.4
Future PM Alightings at New Entrance	830	465	15.5

Source: WMATA Faregate Data, Arlington County Land Use Data

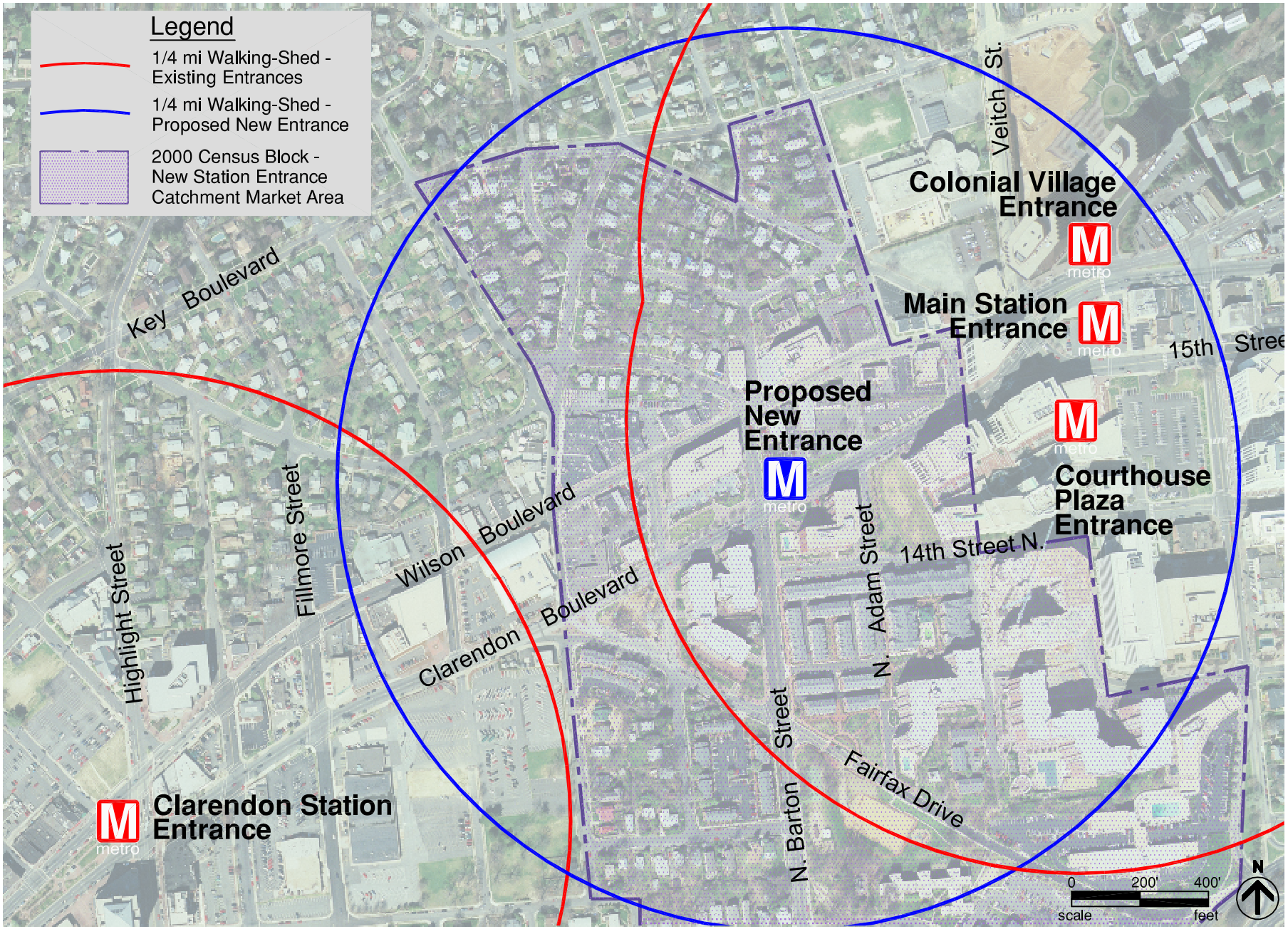


Figure 18: New Entrance Demand Analysis - Catchment Area

WMATA Demand Analysis for New Station Entrance *continued)*

The calculations to determine the elevator system requirements indicate that two high-capacity, high-speed street elevators would provide efficient service for the future demand of 600 passengers at the new station entrance in the peak half-hour period. Because this is an elevator-only entrance to the station, an additional third elevator car should be included to maintain an acceptable level of elevator service during periods of service disruptions for repairs and maintenance.

An enclosed exit stairway from the mezzanine to the street would need to be wide enough to handle the egress capacity requirements of passengers exiting 1/2 of the platform during an emergency. The additional exiting capacity the new entrance would provide at the opposite end of the platform would increase customer safety at the Court House Station.

The calculations for the number of fare aisles in a faregate array in the station mezzanine show a minimum requirement of three units to accommodate the peak demand. However, WMATA's Design Criteria Manual dictates a four faregate minimum in an array inside a Metrorail station mezzanine. The pay area of the mezzanine would also include three fare vending units, two add fare units, and one kiosk for a station manager.

4.0 STATION ACCESS IMPROVEMENTS

Elevator Service

Current WMATA design criteria for new or expanded Metrorail station facilities require redundant elevator service between all levels of a station. When two elevators are provided between each level in a station, access for customers using a wheelchair can be maintained even if one of the elevators is shut down for repairs or maintenance. Maintenance can be performed during revenue hours whenever necessary without restricting wheelchair access.

Although the existing entrances to the station can accommodate the projected growth in ridership, many existing and future customers accessing the station from the west could adversely increase demand on the already constrained street elevator. The Navy League Building is expected to generate an additional 500 new Metrorail customers who would presumably access the Court House Station via the street elevator located directly across Clarendon Boulevard.

Elevator Service *(continued)*

Providing additional elevator service from the street level down to the platform level would be the best method for improving customer access to the Court House station. Not only would additional elevators at the station provide redundancy in service, but they also would relieve overcrowding conditions and long wait times at the one existing street elevator and would help accommodate the projected growth in ridership. Should ridership demand continue to strain the existing street elevator, it could be replaced with a high-speed elevator (see Appendix I for comparison).

New Station Elevator Entrance

Installing additional elevators in the existing elevator location would likely involve shutting down the existing elevator for an extended period of time; therefore, another location needs to be considered. Installing additional elevators at another location in the vicinity of the existing street elevator would involve closing that portion of the sidewalk during construction, restricting access to the adjacent building entrances.

A new elevator entrance located at the west end of the existing train room would improve access to the Court House station for many customers by providing convenient, direct access to the station platform and reducing walking distances. In transit planning, to determine the walking mode share for customers accessing a station, a catchment area of a 1/4 mile radius from a station entrance is used [Figure 18]. A new station entrance located at N. Barton Street and Clarendon Boulevard, 1,000 feet away from the nearest existing Court House station entrance, would increase the walking catchment area for the station and is expected to attract new customers to the Metrorail system. A new entrance with escalators was not considered for this study due to the high capital and maintenance cost of escalators and the problems foreseen in constructing an escalatorway in this location. High-speed elevators can serve the customer demand just as efficiently as escalators.

New Station Elevator Entrance *(continued)*

The preferred site for the proposed new station entrance is located on a mostly vacant city block of approximately 68,000 square feet, and is one of the five designated parcels in the Courthouse area with unbuilt development capacity [Figure 19]. The three, 1-3 story commercial buildings located on the north side of the parcel were built 40-60 years ago and range in size from 4,000 to 9,000 square feet of leaseable space. Given the historical trend of Metrorail investment serving as a catalyst for transit-oriented development in the Rosslyn-Ballston corridor, a new station entrance in the immediate vicinity of these underdeveloped parcels would likely accelerate their redevelopment to the build-out capacity.

Figure 19: New Station Entrance Site

Street Improvements/Image

Part of the Arlington County vision for transit-oriented development includes emphasizing pedestrian access and safety by planning for: paved crosswalks at street intersections, pedestrian countdown signals, paved sidewalks wide enough for future restaurant seating, bike lanes, street trees, and street-level retail. The design for a new elevator entrance to Court House Station would be planned within a mixed-use development that incorporated the County's design precepts for transit-oriented development, having distinctive architecture that raises the overall attractiveness and image of the Courthouse community.

5.0 NEW STATION ENTRANCE DESIGN

Design Alternatives

Part of the planning process for a new station entrance and mezzanine involves the development and analysis of alternative design solutions. When considering the alternatives, the location of the street elevators is first in the planning hierarchy. To gain the largest catchment area for potential new Metrorail customers, the new elevator entrance should be located as far from the existing station entrances as practical. The vacant corner on the northeast side of the Clarendon Boulevard and N. Barton Street intersection is the preferred new station entrance since a mezzanine can be located adjacent to the west end of the train room.

Since the original design for the concrete station structure did not include knock-out panels in the vault for future expansion, any access to a new mezzanine would involve cutting through the existing concrete structure. Two design solutions were evaluated. The initial design alternative considered, but not shown in this study, involved cutting through the end of the existing train room concrete wall to connect a new floating mezzanine above the west end of the platform with a pay area mezzanine above the west service rooms and train tunnel, located directly below Clarendon Boulevard. ***T***his alternative involved removing approximately 8,000 cubic yards of earth above the existing structure and decking over the entire width of Clarendon Boulevard in a sixty foot long section so vehicular traffic could be maintained during construction. Also, a wide 42 inch deep section of the 54 inch thick concrete roof above the west service rooms would have to be cut out and removed to provide adequate headroom clearance between the floor of the floating mezzanine and the bottom of the train room vault. Given the difficulty and expense of excavating under Clarendon Boulevard and cutting the existing concrete structure, another alternative was considered.

Preferred Alternative

The preferred design alternative for a new entrance and mezzanine involves accessing a new mezzanine through a cut-opening in the side of the train room vault structure. In this alternative [Figure 22], a floating mezzanine is constructed over the western end of the train room and incorporates an escalator and stairway along with an elevator. This combination is the most efficient vertical transportation system for optimizing passenger flow from the platform to a new mezzanine. A stairway is incorporated in the design to address the emergency egress requirements for passengers exiting the platform while an escalator unit would be used to facilitate continuous and efficient passenger flow in the peak direction. A single platform elevator would easily accommodate customers using wheelchairs and those with luggage or strollers.

Preferred Alternative *(continued)*

Although an escalator unit would provide the highest level of passenger flow from the platform to the mezzanine, the option for a stairway and elevator combination without the escalator unit may also be considered. A wide stairway could handle the capacity requirements while affording the benefit of lower installation, maintenance and operating costs and would eliminate service disruptions associated with escalator service which is a major inconvienence to Metro customers.

Court House is a center-platform station, as opposed to a side-platform station. A center-platform station affords the most efficient vertical transportation system, and more importantly, a floating mezzanine is less difficult and less costly to erect over a 30 foot wide center platform than building over two operating tracks at an existing side-platform station.

The floating mezzanine connects to the street elevator vestibule via a bridge over the westbound train track through the cut-opening in the train room vault. The three elevators to the street are located so that there is adequate area for an entrance in front of a wide sidewalk at the street level. A stairway is located adjacent to the elevators to provide emergency egress from the mezzanine to the street. Service rooms on the lower mezzanine level include a mechanical room and an elevator machine room.

At the street level, the station entrance is located along an attractive street front with adjacent retail space and is identified with an overhead entrance canopy and the signature street pylon. The entrance leads to a mezzanine pay area with a station manager's kiosk, faregates, fare vending equipment, and a glass enclosed elevator hoistway. Three traction power, high-speed elevators would take customers directly to the mezzanine level below. The existing narrow concrete sidewalk along N. Barton Street and the north side of Clarendon Boulevard would be replaced with a 16-foot wide paved sidewalk. Street trees would provide shade to station or retail customers walking along the sidewalk, eating outdoors at nearby cafes, or sitting on new sidewalk benches. In addition to benches, other customer amenities include: a pedestrian shelter for a pick-up/drop-off lane on N. Barton Street, bike racks, waste receptacles, public telephones, and wayfinding signs. Design for customer security would include: adequate sidewalk lighting, appropriate station site lighting inside and outside the station entrance, a glazed elevator hoistway and cars for visibility and CCTV surveillance in the vestibule and each elevator car.

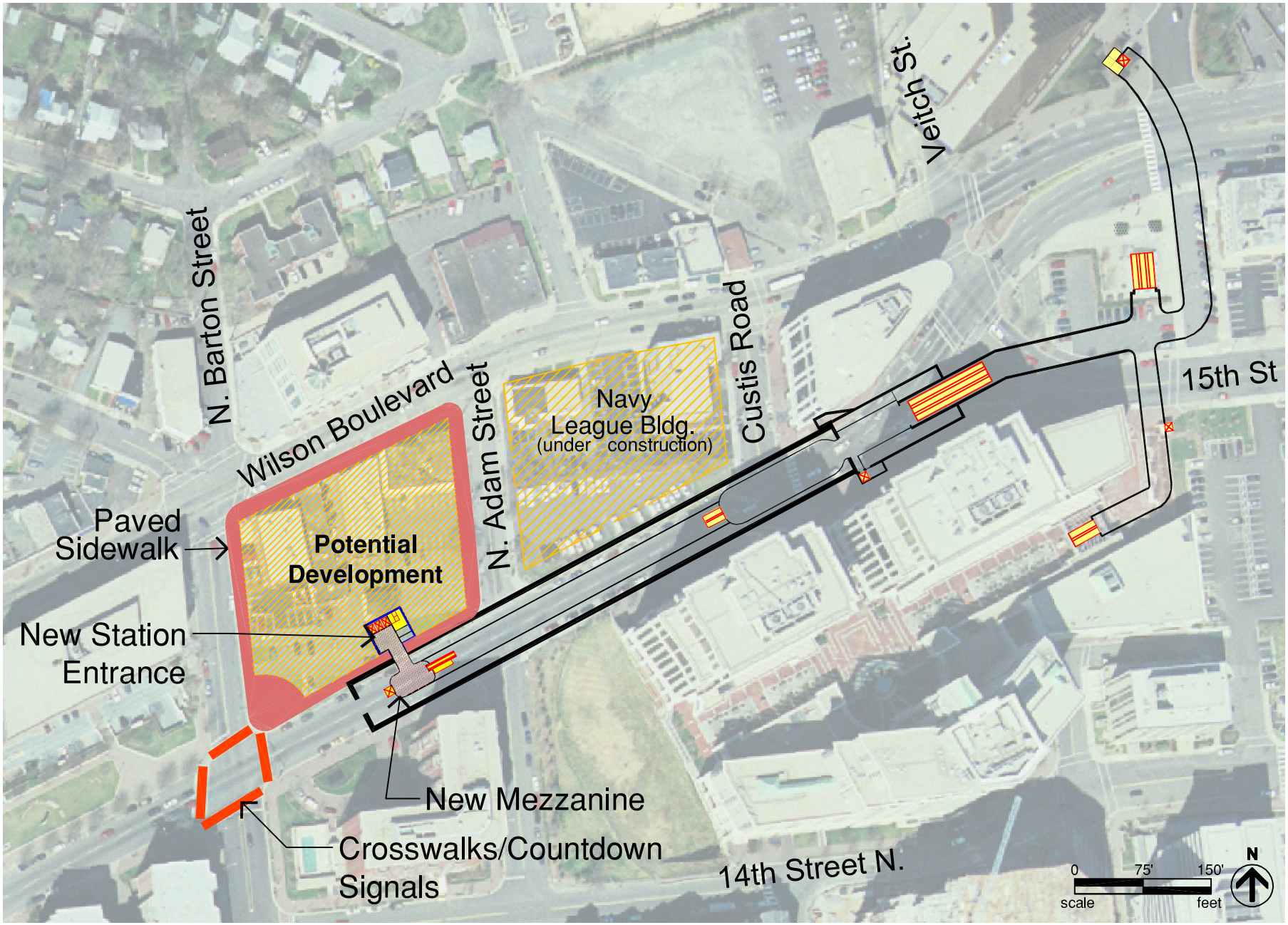


Figure 20: Court House Station Aerial Plan - Proposed New Entrance and Mezzanine

Figure 21: Street Level Plan - Proposed New Entrance

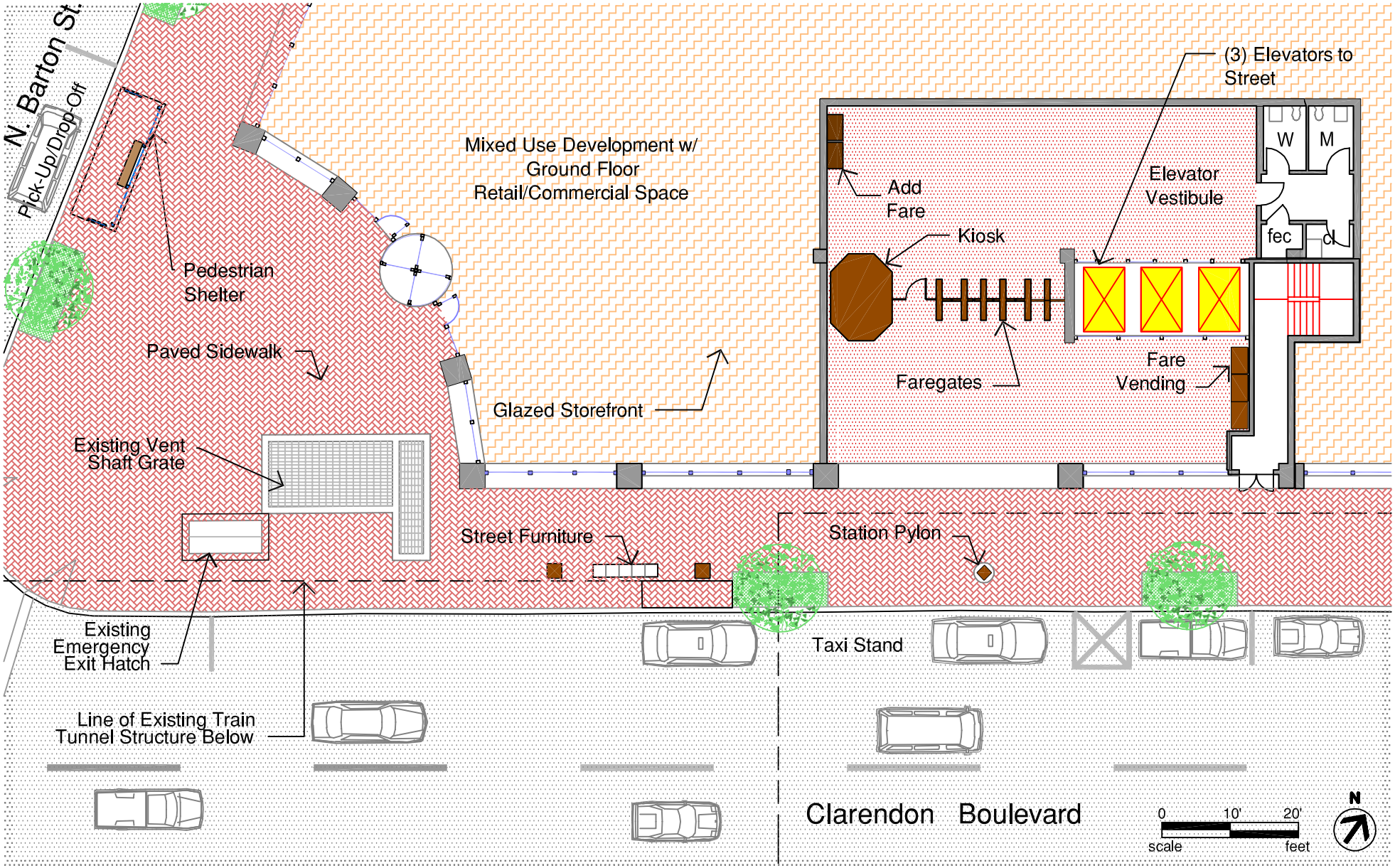
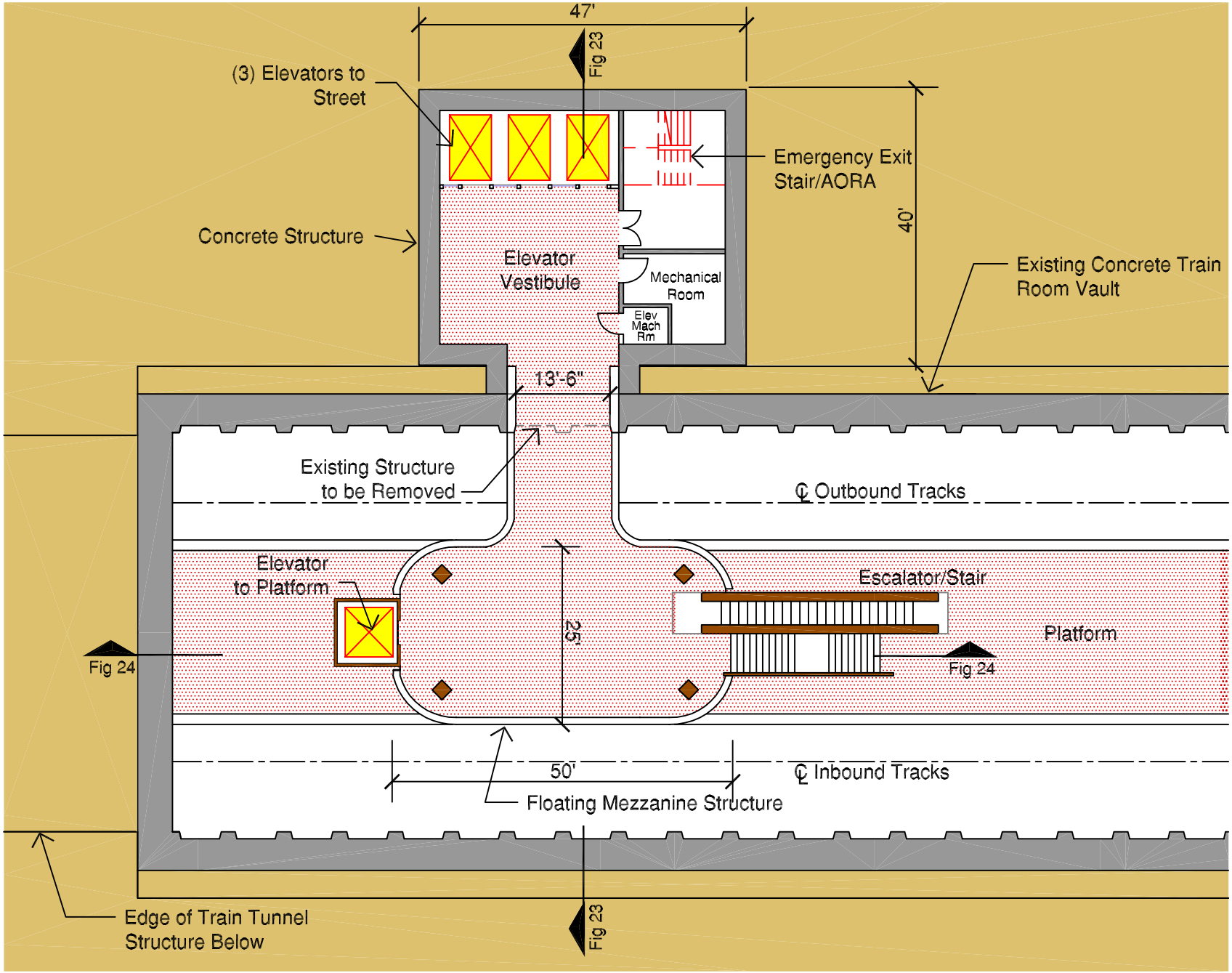


Figure 22: Mezzanine Level Plan - Proposed New Entrance



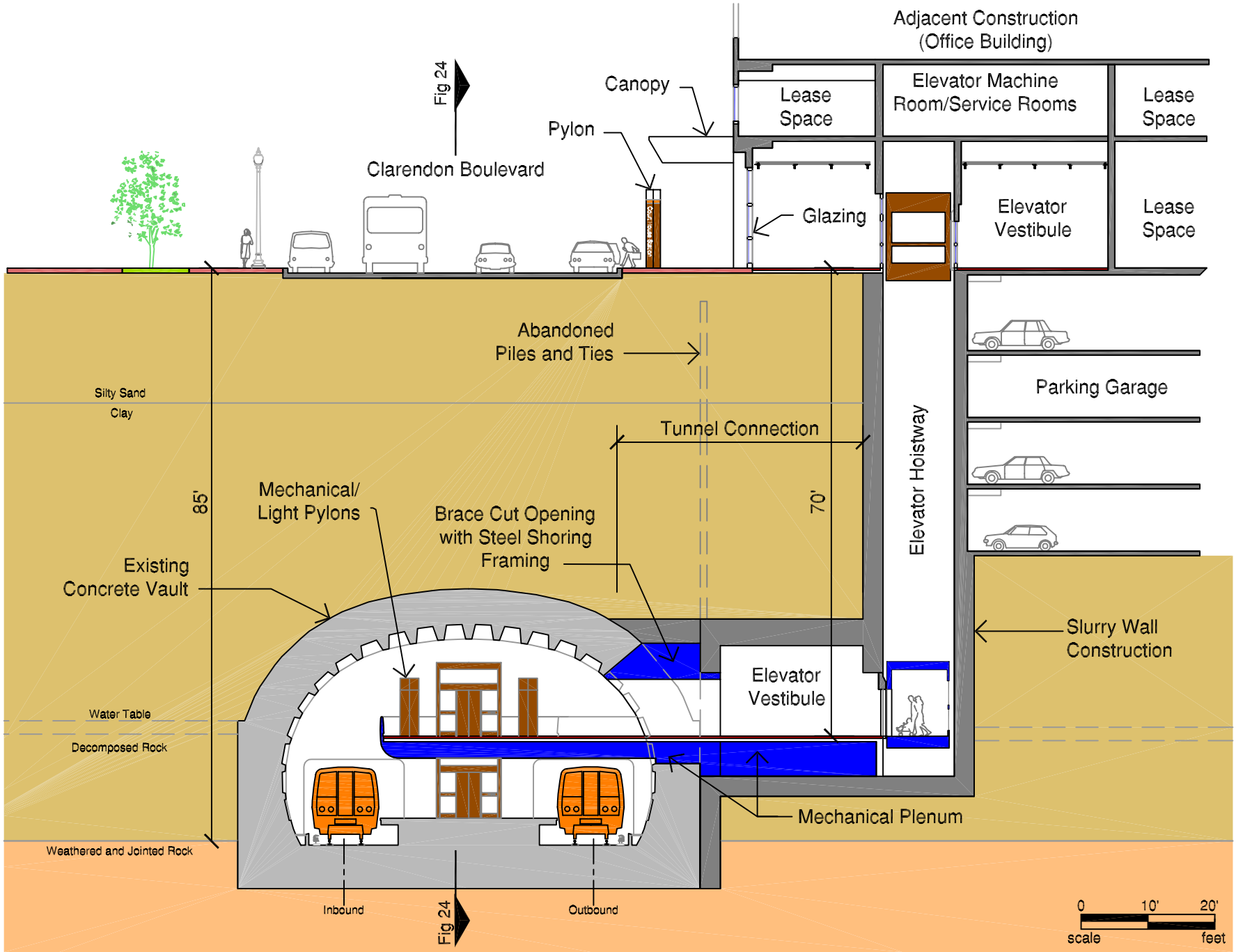


Figure 23: Cross Section Through New Entrance and Mezzanine

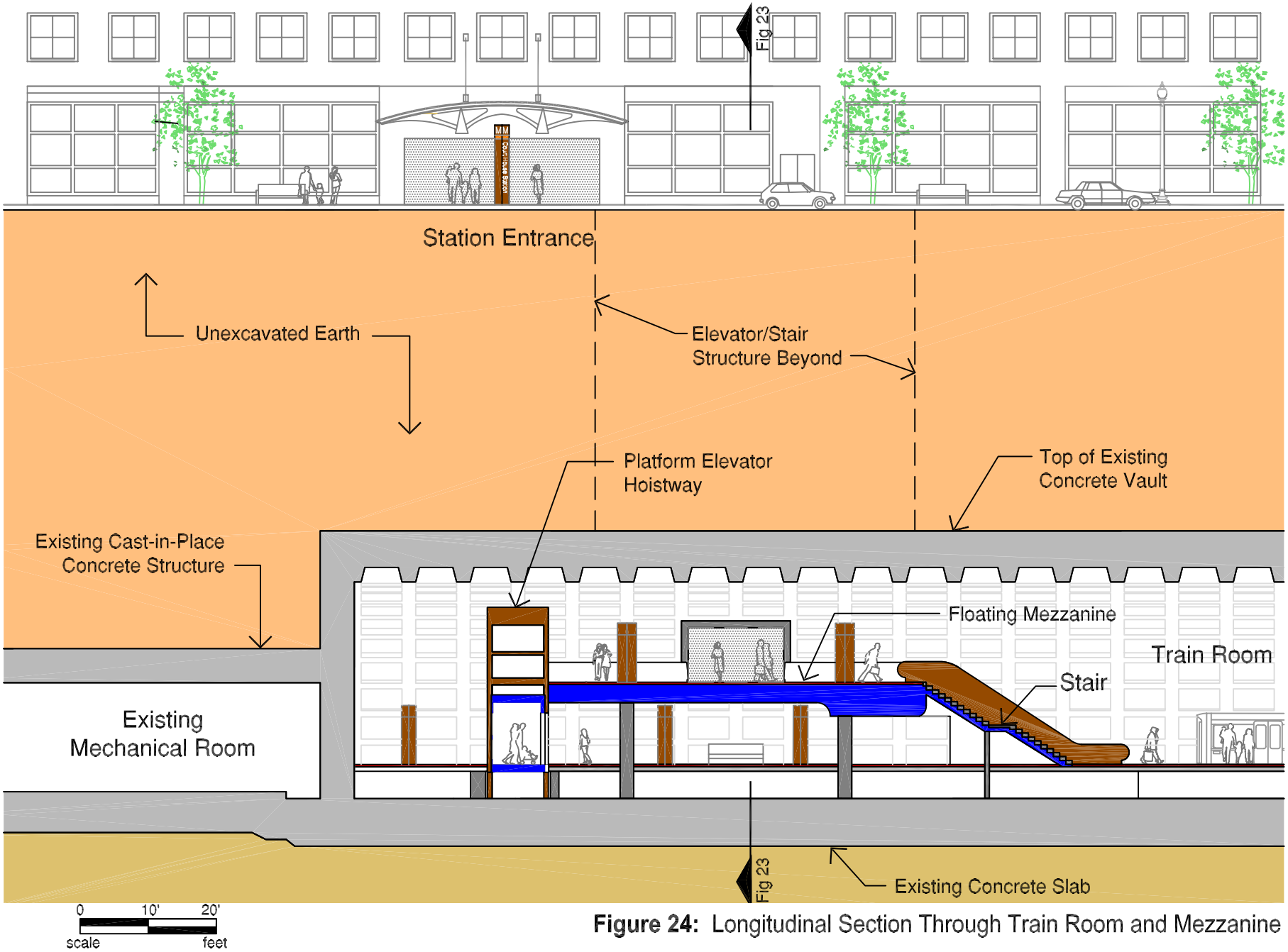


Figure 24: Longitudinal Section Through Train Room and Mezzanine

Construction

The new station entrance, mezzanine, and elevator hoistway would likely be designed and constructed in conjunction with any new development planned for the site. The construction method for shoring, excavation, tunneling, and concrete work would be the Contractor's preference, determined by actual soil conditions and costs.

The opening in the side of the train room structure would involve cutting through two ribs in the concrete vault to create an 18-foot wide opening. The top of the opening would be supported with a reinforced concrete transfer beam supported by concrete columns at each end. A January 2003 engineering study for the Ballston Station Mezzanine & Entrance project analyzed vault modifications for the same opening size and similar loadings as proposed at the Court House Station and determined that cutting through the side of the vault was structurally viable.

Construction of the floating mezzanine structure and installation of the precast parapets would be limited to weekend hours when trains could be single tracked through the station unless a temporary construction platform could be erected to allow work during revenue hours; reducing construction time and project cost. Given the impact on the construction schedule and cost, the feasibility of erecting a construction platform should be examined in the early phase of preliminary engineering. Any feasibility study should first consider customer and worker safety, and verify that proper clearance above operating track can be attained. The Order of Magnitude Cost Estimate (Table 3) takes into account the cost impact of labor inefficiencies with limited working hours.

Waterproofing methods should be carefully evaluated and detailed to prevent water infiltration in the below grade structure, especially at the tunnel connection between the elevator vestibule structure and the vault opening (see Figures 22 and 23).

Other work inside the train room could proceed during normal operating hours unless construction began after the planned eight-car train service was initiated along the Orange Line. Six car trains stopping along the platform could avoid the construction zone in the west end of the platform; eight car trains cannot since they will span the entire length of the platform.

Prior to construction of a new mezzanine and entrance, WMATA and the Contractor must thoroughly coordinate traffic plans with the Arlington County Department of Public Works, Courthouse community residents and businesses to limit the impact of construction on Metrorail service and disruption to vehicular and pedestrian traffic in the Courthouse area.

Order of Magnitude Cost

The approximate cost estimate, or the order of magnitude cost, for the design and construction of the new Court House Station entrance and mezzanine is shown in Table 3.

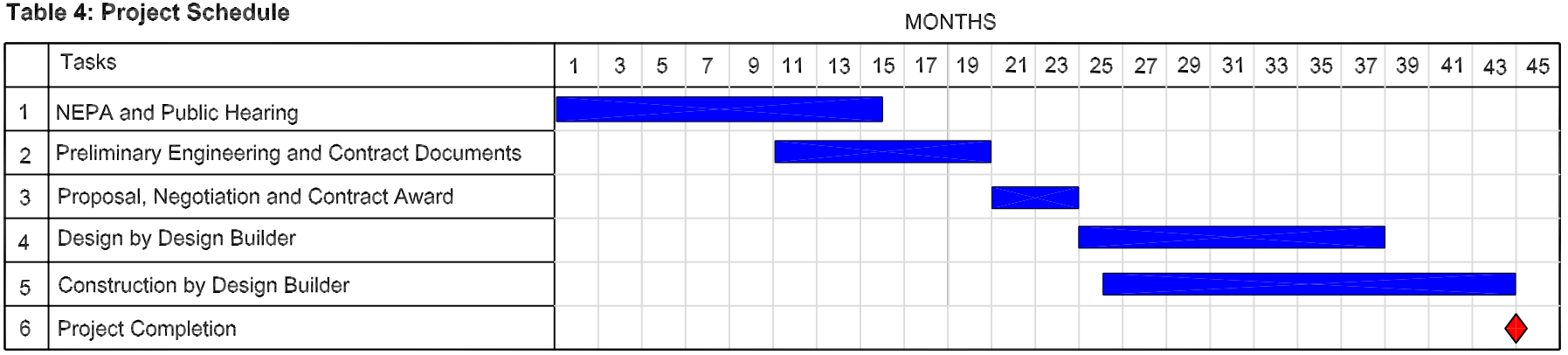
Table 3: Order of Magnitude Cost Estimate

Item No.	Element	Approx. Cost (FY04 $)
1	Mezzanine: Service Rooms, Faregates, Kiosk	$4,700,000
2	Entrance Pavilion: Street Elevators, Hoistway, Emergency Exist Stairwell	$4,100,000
3	Floating Mezzanine: Platform Elevator, Escalator, Stair	$6,600,000
4	Sitework and Structure: Excavation, Concrete Work, Streets, Sidewalks	$650,000
5	Soft Costs: Design+Engineering (10%), Design Management (10%), Construction Support (10%), Insurance/Bond (5%)	$5,617,500
	Sub-Total	**$21,667,500**
6	Contingency (40%)	$8,667,000
	Total Cost	**$30,334,500**

6.0 NEXT STEPS

The Court House Station Access Improvement Study has been prepared to document the need for and feasibility of constructing a new station entrance for Arlington County. If Arlington County decides to advance the planning process, the next steps include preliminary engineering and an environmental assessment (NEPA). The concept design presented in this study would be subject to further development, review and coordination by WMATA, Arlington County and the Courthouse community during an estimated 12-15 month NEPA and public hearing process. After NEPA approval, a Design-Build Contract could be awarded followed by an estimated 20-month construction period [Table 4].

Table 4: Project Schedule



Appendix

Appendix I: Elevator Capacity and Traffic Analysis - Existing Street Elevator

Type: Traction Elevator	Existing		**High-Speed Replacement**	
Capacity:	2500	lbs.	2500	lbs.
Speed:	**75**	ft/min	**350**	ft/min
Door opening:	36	in.	36	in.
Stops:	1		1	
Rise: Approximate	61.5	ft.	61.5	ft.
Number of Elevators:	1		1	
Passenger Loading per trip:	6		6	
Door cycle time:	6.22		6.22	
Lobby time:	1	sec/passenger	1	sec/passenger
Lobby Load time:	6	sec.	6	sec.
Acc. and Dec. time:	2	sec.	2	sec.
Rated Speed:	49.20	sec.	10.54	sec.
Round Trip time:	124.84	sec.	47.53	sec.
Interval: Round Trip Time / Number of elevators	124.84	sec.	47.53	sec.
Handling Capacity: Passengers per half-hour/peak direction	**87**		**227**	
		Actual Capacity		Actual Capacity
Usage: Passengers per AM peak half-hour/peak	183	210%	183	-80%
Usage: Passengers per PM peak half-hour/peak direction	106	120%	106	-58%

* Replacing the existing elevator with a high-speed elevator would provide an additional 20% capacity beyond the the existing demand (183 passengers in the AM peak 1/2 hour); however, a high-speed replacement elevator could only meet future demand at the existing location if the new elevator entrance is built.

Appendix II: Existing Street Elevator Use-Peak AM Half-Hour

			A	B	C	D
	TIME		**UP/ EXITING**	**DOWN/ ENTERING**	**NO BOARD/ WAITING**	**TOTALS (A+B)**
	8:30		12	14		26
	8:32		14	13	8	27
	8:34		3	13	11	16
	8:35		2	12	11	14
	8:37		6	12	7	18
	8:39		4	12	8	16
	8:41		1	13	1	14
	8:43		0	11	2	11
	8:45		11	12	4	23
	8:47		6	10		16
	8:49		9	11	1	20
	8:51		6	11	2	17
	8:54		2	11		13
	8:56		4	11	2	15
	8:58		12	10		22
	9:00		5	7		12
1	**Sub-Total**		97	183		**280**
2	**Totals**		355	867		**1,222**
3	**Percentage**		27%	21%		**23%**

Source: Passenger Counts, September 25, 2003

A. Number of passengers traveling in the up direction.

B. Number of passengers traveling in the down direction.

C. Number of passengers unable to board elevator due to crowding.

D. Total number of passengers in both direction, one cycle.

1. Total number passengers using elevator, peak 1/2 period.

2. Total number passengers accessing station, peak 1/2 period.

3. Percentage of passengers accessing station, peak 1/2 period.

Appendix III: Existing Street Elevator Use-Peak PM Half-Hour

			A	B	C	D
	Time		**UP/ EXITING**	**DOWN/ ENTERING**	**NO BOARD/ WAITING**	**TOTALS (A+B)**
	5:30	w	10	1	5	
	5:32		1		6	
	5:34		8		4	
	5:36		10		5	
	5:38		1		8	
	5:40		0		5	
	5:42		0		1	
	5:44		11	5	3	
	5:46		6		2	
	5:48		10		7	
	5:50	s	11	2	5	
	5:52	s	10	4	5	
	5:54		11	1	5	
	5:56		6		5	
	5:58		0		2	
	6:00		11	3	2	
1	**Sub-Total**		106	16		**122**
2	**Station Totals**		596	375		**971**
3	**Percentage**		18%	4%		**10%**

Source: Passenger Counts, September 25, 2003

A. Number of passengers traveling in the up direction.

B. Number of passengers traveling in the down direction.

C. Number of passengers unable to board elevator due to crowding.

D. Total number of passengers in both direction, one cycle.

1. Total number passengers using elevator, peak 1/2 period.

2. Total number passengers accessing station, peak 1/2 period.

3. Percentage of passengers accessing station, peak 1/2 period.

w Includes passenger using wheelchair.

s Includes passenger with child stroller.

Appendix IV: Elevator Capacity and Traffic Analysis - New Elevators

Type: Traction Elevator

	Capacity:	4000	lbs.
	Speed:	350	ft/min
	Door opening:	42	in.
	Stops:	1	
	Rise: Approximate	70	ft.
	Number of Elevators:	3	*
Passenger Loading per trip:		9.6	
Door cycle time:		6.22	
Lobby time:		1	sec/pers
Lobby Load time:		9.6	sec.
Acc. and Dec. time:		2	sec.
Rated Speed:		12.00	sec.
Round Trip time:		54.04	sec.
Interval : Round Trip Time / Number of elevators		18.01	
Handling Capacity: People per half-hour		**959**	

* While two operational elevators will meet projected demand, a third elevator is necessary to maintain the level of service should one elevator be taken out of service.

Appendix V: Metro is Accessible Program

ADA On Board

Fall 2003

Metro Launches *Metro is Accessible* Project

Metro has launched the *Metro is Accessible* project, designed to encourage people with disabilities to ride Metrobus and Metrorail. Metro's Office of Americans with Disabilities Act Programs (ADAP) and Metro's Elderly & Handicapped Advisory Committee are undertaking several public awareness and educational outreach campaign activities to increase the use of Metrobus and Metrorail by these customers.

The *Metro is Accessible* activities will be directed to a potential population of 385,000 people with disabilities in the Washington metropolitan region. An estimated 80,000 could use fixed-route service (Metrobus and Metrorail service that follows a pre-determined route). Currently, 16,000 people with disabilities are enrolled in Metro's reduced-fare program and 11,000 use MetroAccess (the curb-to-curb service for people who are medically eligible).

ADAP will provide "train the travel trainer" workshops to representatives of disability organizations, such as independent living centers, rehabilitation facilities, special education departments of school systems, agencies on aging, university-based disability services offices and local affiliates of all disability service and advocacy organizations.

These organizations represent potential bus and rail customers and include those with a variety of disabilities among students, seniors and young adults.

The office will administer a Speakers Bureau so that organizations can request guest speakers on Metrobus and Metrorail services for people with disabilities at their meetings and other activities.

ADAP will implement ongoing *Metro is Accessible* project meetings and will participate in a variety of agency presentations on travel options for people with disabilities.

This office will continue its group and individual system orientation program which provides group and individual bus and rail system orientation for people with disabilities.

ADAP will also visit schools to provide on-site photo ID sessions for students with disabilities who plan to ride Metrobus and Metrorail and will institute a referral program for people with disabilities eligible to use private-sector travel training where appropriate.

"The objective of the Metro is Accessible project is to increase the use of Metrobus and Metrorail by people with disabilities," stated Metro General Manager and Chief Executive Officer Richard A. White. "Over the years, Metrobus and Metrorail have increased the number of accessibility features to aid people with disabilities to use our fixed-route systems conveniently and safely. So we strongly encourage these potential customers to give us a try."

The convenient accessibility features Metrobus has added to its individual buses in its 1,446-bus fleet include the following:

- Talking buses that inform people of major intersections and bus stop locations.
- Low floor buses which make it easier for people to board.
- Bus operators who have participated in sensitivity training to more effectively deal with the needs of customers with disabilities as well as senior citizens.
- Lift bus mechanic specialists established to maintain the operational effectiveness of lift buses.

Metrorail also has accessibility features that improve the safety and convenience for customers with disabilities who ride Metrorail, including the following:

- Gap reducers at train entrances to ease entry by customers using wheelchairs.
- Rehabilitated elevators that meet ADA requirements.
- Assistance phone numbers on elevator signs in rail stations.
- Bumpy tile at the platform edge that alert customers with vision impairment that they are nearing the end of the platform.
- Passenger Information Display Signs (PIDS) in Metrorail stations to inform customers of next train arrival and other pertinent service information.
- Barriers between rail cars that help prevent customers with vision impairment from stepping into the gap.
- Braille on rail car intercoms.
- Shuttle service for stations with elevator outages.
- Electronic Elevator Notification (ELLEN) e-mail subscription service.
- Elevator outage notification provided by Internet, phone, PIDS and announcements.

"We can never rest on our laurels and will constantly be examining ways to improve our service for this segment of our customers," noted Rikki S. Epstein, ADA Project Officer within Metro's Office of Americans with Disabilities Act Programs. "The bottom line is that when we improve service for one segment of our customers, all of our customers benefit."

In addition to a public awareness campaign featuring presentations at targeted events, partnerships with agencies serving people with disabilities, a travel training referral program and direct mail and e-mails to this potential customer base, ADAP will also examine implementing talking bus stop signs, talking station signs, increased station lighting and improved pedestrian accessibility to stations and bus stops, among other accessibility features. The date of the official project kick-off event is Wednesday, December 17, 2003.

For more information, please call the *Metro is Accessible* project line at 202-962-1558.